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**THERM-O-RITE**

**Hypo-Hyper-Thermia**

**UNIT and APPLICATORS**

**the use of cold in medicine and surgery**

FEB 7 - 1964

GROUP 489



**THERM-O-RITE PRODUCTS CORP.**

1748 MAIN STREET • BUFFALO 8, N. Y.

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## INTRODUCTION

In 1938 the first mechanical Unit for applying a wide range of controlled temperatures to the human body was offered to the medical profession by its inventor, the late Eugene L. Barnes. This became known as the THERM-O-RITE Unit. At about the time of its introduction, the first intensive research into the USE OF COLD IN MEDICINE AND SURGERY was getting under way, and it became the privilege of THERM-O-RITE to serve the medical pioneers in this field. It followed that the original Unit was improved in accordance with the recommendations of the pioneers, and various types of Applicators were developed for clinical and research purposes.

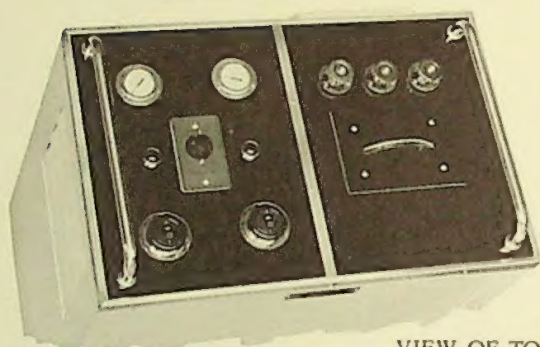
The most widely-accepted Use for Hypothermia occurred first in the field of Peripheral vascular Therapeutics and Surgery. Since that time (1952), the Use of Hypothermia in Thoracic, Cardiac, Cardiovascular and Neurologic Surgery has, likewise, become widely-accepted procedure. And not only in medical centers, colleges and hospitals in the United States, but also in medical institutions in countries throughout the world. And where these procedures are followed, the vital role of reducing body temperature is often played by Therm-O-Rite equipment.

A detailed description of the equipment and a layman's explanation of its mechanical operation are presented in the following pages of this catalog. While the emphasis throughout is placed upon the USE OF COLD, we call attention to the fact that the Hypo-Hyper-Thermia Unit and Applicators provide a convenient and effective method for applying HIGH and INTERMEDIATE temperatures as well.

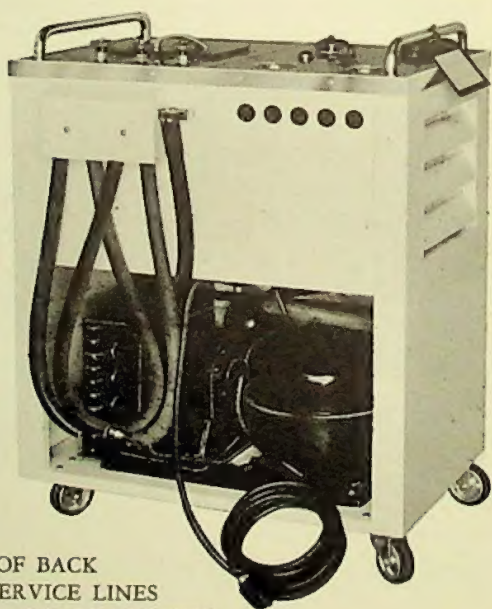
THERM-O-RITE PRODUCTS CORPORATION



THERM-O-RITE  
HYPO-HYPER-THERMIA  
UNIT



VIEW OF TOP  
SHOWING CONTROLS AND GAUGES



VIEW OF BACK  
SHOWING SERVICE LINES  
TO APPLICATORS AND DRAIN-TUBE

## **THE THERM-O-RITE HYPO-HYPER-THERMIA UNIT**

The Hypo-Hyper-Thermia Unit is a steel cabinet with black Formica top; rectangular in shape; DULUX white enamel finish; chromium handles and trim; and is mounted on double ball-bearing swivel casters with rubber tires. Easily mobile. Overall size: L 27" D 18" H 36"; Wt. 230 lbs. Crated approx. 310 lbs. Boxed for overseas approx. 380 lbs. The Unit contains an insulated copper tank which is fitted with a copper refrigeration coil and a 1500 watt electric immersion heater. The cabinet also contains a  $\frac{1}{3}$  Hp. hermetically-sealed refrigeration unit and a dual control thermostat which controls both the refrigerating and heating units. The Unit has flush-mounted thermometer and pressure gauge on top, together with valve-controls which serve the flow to the Applicators. Operates on 60 cycle 110 volt AC. *Other cycle or voltage by special order.* Two flush-mounted pilot lights—green for the condenser, red for the heater—indicate when the refrigerating or heating unit is in operation. The Unit is simple to operate and requires no technical knowledge. It is pleasing to the eye, expertly engineered and sturdily constructed. In the absence of gross abuse or neglect, the Unit should give many years of service. On the rare occasion when, as in the case of a domestic refrigerator, something goes amiss, the hospital engineer or electrician or any competent electric refrigeration serviceman can handle the job.

### **MECHANICS OF OPERATION**

First, one gallon of *propylene glycol* (or denatured ethyl alcohol) is poured into the tank. Then water is added to bring the level of the solution above the top of the coil. Evaporation or loss of the solution is negligible. The temperature of the solution can be

lowered, raised or maintained at any chosen point within a range of 20° to 140° F by means of the thermostatic control. Any desired temperature within the above mentioned range can be clinically applied to the patient by Applicators which are specially designed for use with the Unit. The solution in the tank is circulated through the applicators by a motor-driven pump contained in the cabinet. The applicators are hereafter pictured and described in detail.

## APPLICATORS

All of the present applicators are flexible. Rubber tubing is channeled between two layers of rubberized fabric. The fabric can be readily sponged with an antiseptic soap solution, then wiped dry and, if desired, lightly powdered with talcum or antiseptic powder. The applicators are made in various sizes and shapes for efficiency and convenience in applying a desired temperature to the whole body or to any external part. They readily conform to the contour of the body or its parts. Because they are flexible, they can be adjusted to patients of quite dissimilar size—making for economy in the number and variety required for a complete hospital service. The applicators have been given specific names denoting a particular use for each, but they are by no means limited to such uses, as will be shown later in several instances. *For the owners of THERM-O-RITE Units the company is always ready and willing to cooperate in the design of new applicators to meet new objectives.* If the simple instructions in regard to the use and care of the applicators are followed, they should last several years. However, if damage occurs, they can usually be repaired at the factory for a modest charge.

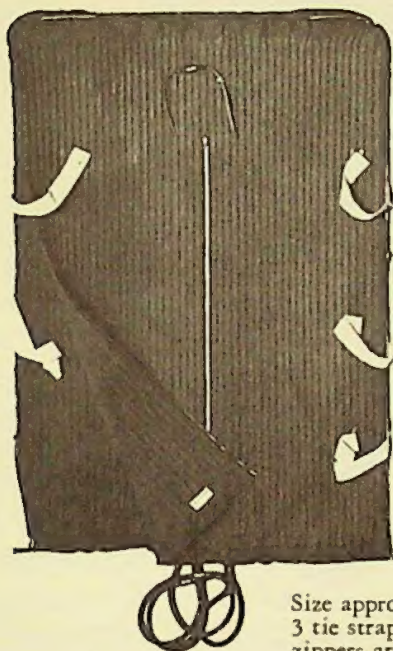


## LARGE BLANKETS

used for

### GENERALIZED REFRIGERATION

(reduction of body temperature)



Size approximately 36" x 60"  
3 tie straps on each side  
zippers around sides and end.

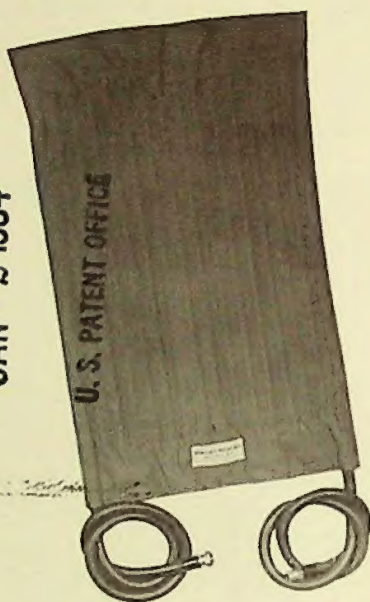
The complete set consists of an underpad, an over-blanket and headpiece. When the bottom and top blankets are zipped up the sides and around the shoulders, they resemble a sleeping bag. The head-piece, pictured later, almost entirely encloses the head with the exception of the face. The top blanket contains a 36" zipper-opening for observational and servicing purposes. A complete circulation of the temperature-controlled solution takes place approximately every 30 seconds. The blankets and headpiece can be purchased separately or as a set. Whether the entire set should be used depends upon the objective sought and the size of the patient.

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## SMALL BLANKETS

USED FOR  
GENERALIZED or LOCALIZED  
REFRIGERATION



### SMALL BLANKET APPLICATOR

Size approximately 24" x 38"  
Has 3 tie straps on each side.

This blanket can be used for Generalized Refrigeration on an infant or small child or in laboratory experiments. It can be wrapped around the inductee or used as one of a pair to form an underpad and over-blanket.

The Small Blanket can also be used for Localized Refrigeration of a limb.



# **SOME USES FOR GENERALIZED REFRIGERATION**

## **For THORACIC, CARDIAC, CARDIOVASCULAR and NEUROLOGIC SURGERY**

The use of Hypothermia in connection with the above surgical procedures requires an abnormally low body-temperature. To obtain such a temperature the patient must be completely encased in a single Therm-O-Rite blanket or placed between two of them. Some also use the Headpiece.

When the body temperature has been lowered to within 4 or 5 degrees of the desired temperature, some anesthesiologists start using the Unit's heater to elevate the fluid temperature to about 65° F by a mere adjustment of the thermostat. This is done to prevent or minimize the usual drift of 4 or 5 degrees. Others merely switch off the circulating pump, allowing the room temperature and body temperature to counteract the drift-tendency.

## **POSTOPERATIVE REWARMING**

The patient can be restored to normal in the blanket(s) by a gradual automatic elevation of the fluid temperature about 2° F per minute. If this is too slow, the fluid can be drained off within 30 seconds and saved for reuse. Warm to hot water can then be put into the tank and the thermostat set for any desired rewarming temperature. The exact temperature is quickly reached and thereafter automatically maintained.

## **For REDUCTION OF MANY TYPES OF HYPERPYREXIA**

(due to disorder of the heat regulatory mechanism, whether postoperative, traumatic or infectious)

The use of Hypothermia for such purpose requires only a moderate reduction of temperature. It can usually be accomplished with an underpad only, whether it be the large blanket or the small blanket. A quicker reduction can be achieved when

patient is completely encased in one blanket or placed between two of them.

### **For TREATMENT OF SYSTEMIC SHOCK**

For systemic shock a reduction of body temperature of 2° to 4° is recommended. Such a reduction can usually be obtained by use of an underpad only.

## **APPLICATORS FOR LOCALIZED REFRIGERATION**

Localized radical refrigeration has the unique power to control simultaneously pain, shock, exudation, infection and tissue devitalization. Some of the accepted uses for localized refrigeration are:

ANESTHESIA FOR AMPUTATIONS

PRESERVATION OF LIMBS FOR LONG OR SHORT PERIODS

Such preservation permits omission or delay of debridement and postponement of surgery with their attendant shock. Meanwhile, time is granted to build up the patient's constitutional strength and to permit the surgeon to consider the alternative of Repair Surgery rather than amputation. Frequently amputation can be avoided or the site lowered. Such preservation is particularly valuable in many cases of

CRUSH INJURIES

THROMBOSIS AND EMBOLISM

BURNS AND FROSTBITE

TREATMENT OF PERIPHERAL VASCULAR DISEASES

ORTHOPEDIC OPERATIONS

RELIEF OF PAIN PARTICULARLY SCIATIC OR  
NEURITIC

## ALLEN LIMB APPLICATORS

Calf

Size 17" x 20" approx.

Thigh

Size 17" x 28" approx.

The Allen Limb Applicators can be used singly or as a pair to apply localized refrigeration for purposes of prophylaxis, therapeutics or anesthesia.

THIGH  
APPLICATOR



CALF  
APPLICATOR



BOOT APPLICATOR



Used for the application of Localized Refrigeration or intermediate temperatures to a traumatized or infected ankle or foot. Fits snugly. Opens up for inspection.

Valuable for amputation anesthesia or for Peripheral vascular therapeutics.



## HEADPIECE



The headpiece is frequently used with the large blankets to induce Systemic Refrigeration. It can also be used separately for relief of many acute head pains of various origins.

## SHOULDER APPLICATOR

This applicator fits right or left shoulder girdle, covers about two-thirds of the upper arm, extends down 4 or 5 inches on the axilla and up to the base of the neck. It can be used to treat painful stiff shoulders.

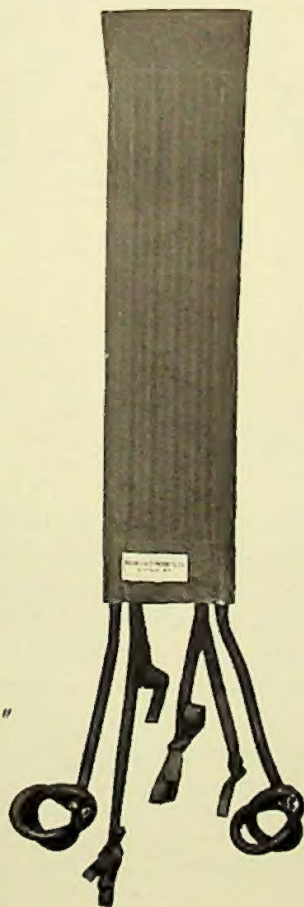
SHOULDER  
APPLICATOR  
APPLIED



## NECK APPLICATOR

Can be used to apply COLD to the thyroid area; also to apply COLD to the limb articulations for orthopedic operations. We know of one case where it was taped under the left breast of a nurse to successfully relieve an intractable neuritic pain.

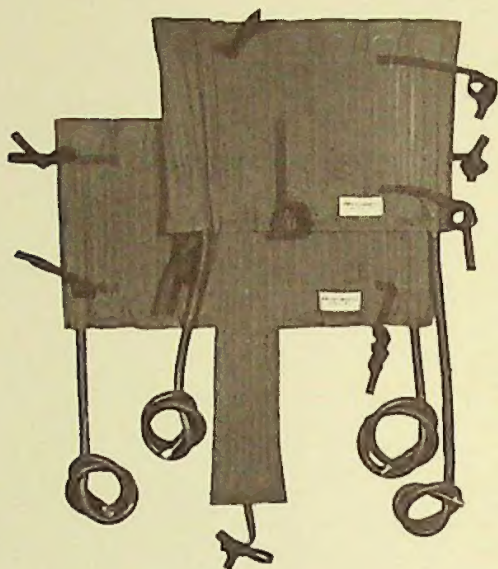
The pain had stubbornly resisted all orthodox treatments and the nurse had been unable to work for more than a month. The pain was completely relieved within  $\frac{1}{2}$  hour after application of  $45^{\circ}$  temperature. The treatment was continued for 36 hours. Attending physician thought such long application probably unnecessary. No recurrence within 5 year period.



Size 6" x 23"

## SHORTS

Used for the treatment of low back pain.



## SERVICE

It has always been the policy with this Company to use materials and component parts of the highest quality and workmanship in the manufacture of its finished products. Also, to render efficient and satisfactory service on repairs and in furnishing parts. Therm-O-Rite will continue to provide goods and services on this principle.



*" . . . Future generations may find it difficult to understand why it has taken us so many years to appreciate the significance of reduced temperature."*

*Editorial—A. M. A. J.*

*" . . . In our opinion, the use of cold is probably one of the most fertile fields of research yet opened to modern medicine."*

*Editorial—N. Y. S. M. J.*

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**PRODUCTS**

**CORPORATION**

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